

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN**

U.S. WATER SERVICES, INC. and
ROY JOHNSON,

Plaintiffs,

v.

NOVOZYMES A/S and NOVOZYMES NORTH
AMERICA, INC.,

Defendants.

Case No. 3:13-cv-00864-jdp

**NOVOZYMES' RENEWED MOTION UNDER RULE 50(b) FOR JUDGMENT
AS A MATTER OF LAW OF INVALIDITY AND, IN THE ALTERNATIVE,
MOTION FOR A NEW TRIAL ON INVALIDITY UNDER RULE 59**

PUBLIC VERSION

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I. INTRODUCTION

Pursuant to Federal Rule of Civil Procedure 50(b), defendants Novozymes A/S and Novozymes North America, Inc. (collectively, “Novozymes”) move for judgment as a matter of law that the asserted claims of U.S. Patent Nos. 8,415,137 (“the ’137 patent”) and 8,609,399 (“the ’399 patent”) are invalid. In the alternative, Novozymes moves under Federal Rule of Civil Procedure 59 for a new trial on whether the asserted claims are invalid.

II. NOVOZYMES IS ENTITLED TO JUDGMENT OF INVALIDITY AS A MATTER OF LAW

The asserted claims of the ’137 and ’399 patents are invalid. At trial, Novozymes presented clear and convincing evidence establishing that (1) the asserted claims are anticipated under 35 U.S.C. § 102 because each element of the asserted claims in both patents was disclosed, either expressly or inherently, in a single prior art reference (i.e., Veit); (2) the asserted claims are obvious under 35 U.S.C. § 103 in light of the prior art (i.e., the combination of Veit and Caransa); and (3) the asserted claims are invalid under 35 U.S.C. § 112 for failure to satisfy the written description requirement. For the reasons explained below, the Court should grant Novozymes’ motion for judgment as a matter of law. No reasonable jury could have found that the asserted claims are not anticipated or obvious, nor could a reasonably jury have concluded that the inventors possessed the claimed invention as of the priority filing date.

A. Legal Standard for Judgment as a Matter of Law

In resolving a motion for judgment as a matter of law under Rule 50(b), a district “court must determine whether the jury had a legally sufficient evidentiary basis for the verdict it reached.” *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 76 F. Supp. 3d 806, 812 (W.D. Wis. 2014); *see also Tate v. Executive Mgmt. Servs., Inc.*, 546 F.3d 528, 531–33 (7th Cir. 2008) (in reversing district court’s denial of Rule 50(b) motion, observing that a jury verdict will be

overturned where “no rational jury could have found for the” nonmoving party). In so doing, the court must “construe the facts strictly in favor of the party that prevailed at trial, including by drawing all reasonable inferences in that party’s favor and disregarding all evidence favorable to the moving party that the jury is not required to believe.” *Douglas Dynamics*, 76 F. Supp. 3d at 812 (internal quotations and citations omitted). The court “does not make credibility determinations or weigh the evidence,” but “must assure that more than a mere scintilla of evidence supports the verdict.” *Wis. Alumni Research Found. v. Apple, Inc.*, No. 14-cv-62, ___ F. Supp. 3d ___, 2017 WL 2438832, at *2 (W.D. Wis. June 6, 2017).

B. No Reasonable Jury Could Have Found that Veit Does Not Necessarily Disclose Reduced Formation of Phytate Deposits, Thus Inherently Anticipating the Asserted Claims

It was undisputed in advance of trial that the prior art reference Veit¹ explicitly discloses all elements of the asserted claims but one, namely, reduced formation of phytate deposits in fuel ethanol processing equipment. Dkt. No. 728, Final Pretrial Conference Order at 23–24. The jury was so instructed at the conclusion of the liability phase:

The court has already determined that Veit teaches all of the elements of the asserted claims except one: reducing the formation of insoluble deposits of phytic acid or salts of phytic acid. In determining whether the asserted claims are anticipated, you must assume that Veit teaches all of the other elements of each asserted claim.

Dkt. No. 803, Post-Trial Jury Instructions at 13. Accordingly, the only issue remaining for the jury to determine at trial was whether reduced formation of phytate deposits is inherently disclosed by Veit. Inherency requires that the missing characteristic be “necessarily present” in the otherwise anticipating prior art reference, regardless of whether a skilled artisan at the time

¹ Veit is a published international patent application entitled “Fermentation with a Phytase.” DTX 2069 at 001. It was published on August 30, 2001, and its priority date of February 23, 2000 predates the filing of U.S. Water’s parent application by more than seven years. *See id.* Veit is assigned to Novozymes A/S. *Id.*

would have recognized the inherent disclosure. *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003). Given the evidence of record, no reasonable jury could have concluded that the teachings of Veit do not necessarily result in reduced formation of phytate deposits.

1. Reduced Formation of Phytate Deposits Necessarily Results from Practicing Veit

It is undisputed that phytase is an enzyme whose natural activity is to degrade phytic acid and phytate. Veit teaches adding phytase during the fermentation step of fuel ethanol production in order to degrade phytate; the resulting decrease in the amount of phytate in ethanol processing fluid necessarily reduces formation of phytate deposits. But even if a jury were entitled to disregard basic principles of chemistry, both parties' experts agree that Example 1 of Veit discloses *degradation of all phytate* in ethanol processing fluid, thus *eliminating phytate deposit formation* entirely. That single embodiment suffices to prove inherent anticipation by clear and convincing evidence, and thus U.S. Water should not be permitted to remove from the public domain knowledge and methods long known in the art.

a. Veit and the Asserted Patents Teach the Same Chemical Reaction

Veit necessarily discloses reduced formation of phytate deposits because that is how the underlying chemistry works. Simply put, there is no disagreement that both the asserted patents and Veit teach the addition of phytase during fuel ethanol production; that phytase is an enzyme that degrades phytate; and that by definition, the products of phytate degradation cannot contribute to fouling by phytate. Nor do the asserted claims require any particular threshold of reduction in phytate deposit formation; pursuant to the Court's construction, phytate deposition in the presence of phytase must simply be *less than* what it would have been in the absence of phytase. Accordingly, pursuant to the underlying chemistry, any reduction in the amount of

phytate in ethanol processing fluid necessarily results in reduced formation of phytate deposits; the asserted claims require nothing more.

First, the method claimed by the asserted patents is based on the addition of phytase to ethanol processing fluid to prevent the deposition of phytic acid and phytic acid salts (i.e., phytate) on surfaces in fuel ethanol processing equipment. Like the asserted patents, Veit also describes the addition of phytase to ethanol processing fluid. DTX 2069 at Abstract (“The present invention relates to an improved fermentation process wherein phytic acid-containing material is fermented in the presence of a phytase, e.g. in fermentation for the production of ethanol.”); *id.* at 2:16–21 (“The process of the invention may in one embodiment be an ethanol process comprising the below steps, wherein phytase activity is added during pre-saccharification and/or fermentation. It is to be understood that the phytase according to the invention may be added during the propagation of yeast cells and/or later on during the actual fermentation.”); *id.* at 8:6–7 (describing addition of phytase during fermentation); *id.* at 8:8–11 (describing addition of phytase during pre-saccharification or saccharification); *see also* Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 112:18–113:9, 123:22–124:8 (Kohl). That Veit discloses the addition of phytase to the fermentation and saccharification steps of fuel ethanol production is undisputed. *See, e.g.*, Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 105:24–106:2 (Flanegan) (“So Veit talks about you could use phytase in saccharification, where they’re converting starch at higher temperatures, and they talk about being able to do it in the fermenter.”).

Second, it is also undisputed that phytase is an enzyme that degrades phytic acid and phytate. *See, e.g.*, Dkt. No. 776, Young Dep. Tr. at 24:1–7 (“A phytase, as I’ve seen it defined, is an enzyme which is capable of breaking down the molecule phytic acid . . .”); *id.* at 52:8–53:16; Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 119:3–8 (Flanegan) (admitting that “the

purpose of phytase broadly is to break down phytic acid”); *id.* at 125:5–10 (Flanagan) (agreeing that “if the phytase is functioning in the environment that it’s in . . . there will be some breaking down of the bonds that form that phytic acid”); *see also* Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 65:14–69:1 (Kohl). The products of that enzymatic reaction include inorganic phosphates and inositol. Indeed, the activity of phytase and the resulting degradation products are described both by the asserted patents and by Veit. *Compare* DTX 2001 at 3:12–15 (“The present invention relates to converting insoluble phytic acid salts (i.e., phytate) to soluble inorganic phosphates and an organic compound (i.e., inositol) . . .”), *and id.* at 5:32–38 (“In an embodiment, the agent is an enzyme capable of digesting or degrading (e.g., hydrolyzing) organic phosphates or phosponates into soluble inorganic phosphates and an organic compound. For example, the agent can be a phytase, which can hydrolyze phytate to inorganic phosphate and inositol.”), *with* DTX 2069 at 7:31–34 (“The phytase used according to the invention may be any enzyme capable of effecting the liberation of inorganic phosphate from phytic acid (myo-inositol hexakisphosphate) or from any salt thereof (phytates.”), *and id.* at 5:26–29 (referencing “phytin to inositol [sic] conversion”); *see also* Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 117:25–118:19, 125:2–19 (Kohl).

Nor is it subject to reasonable debate that a given molecule of phytate can no longer contribute to phytate deposits following its degradation. As that phytate molecule no longer exists, it is not available for deposition:

The phytase reacts with the salts of phytic acid. As it does – as we’re taught to do, we’re taught this is the desired goal – when it does that, we break down those phytate molecules into these smaller molecules. And these smaller molecules are more soluble at these temperatures than the phytic acid molecules. So when we add the phytase in, that reaction occurs. And then as we pump that fluid through the beer well, and through the beer/mash heat exchanger, and through the beer column, and through the stillage tanks, and through the evaporator, that material doesn’t have phytic acid salts, or at least a substantial reduction in phytic acid

salts . . . [A]nd so we don't get the same amount of phytic acid salt fouling. And if we remove all of them, we don't get any phytic acid salt fouling.

Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 75:7–76:17 (Kohl). Thus, the activity of phytase necessarily reduces formation of phytate deposits by reducing the amount of phytate. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 17:20–18:11 (Kohl) (“If you follow the teachings of Veit, you will necessarily reduce the formation of insoluble deposits.”); *see also id.* at 112:23–113:2 (Kohl).

Critically, the asserted claims—all of which include the limitation “thereby reducing the formation of deposits of insoluble phytic acid or phytic acid salts on surfaces in the equipment”—do not require any minimum threshold of reduction.² In finding this term to be not indefinite, the Court explicitly rejected Novozymes’ argument that a minimum amount of reduction must be specified, and instead concluded that “the ‘reducing’ element is satisfied if the amount of phytic acid and phytic acid salt is reduced more than it would have been without the use of phytase.” Dkt. No. 681, Claim Construction Order at 8–9, 27; *see also* Dkt. No. 803, Post-Trial Jury Instructions at 6. Thus, reduction of phytate deposition by even a single molecule of phytate suffices to satisfy the asserted claims.

U.S. Water did not introduce any evidence to the contrary. Rather, its technical experts testified at trial that an insufficient phytase dose will fail to reduce phytate deposit formation *as reflected by commercial indicators of fouling*. In particular, Mr. Dorn testified—with no corroboration—that he observed a plant operator inadvertently add “less than the desired amount” of pHytOUT to a fermenter, and consequently “the operation, the results, the heat

² Because U.S. Water was permitted to argue (incorrectly) to the jury that reduction in phytate deposits must be measurable through commercial means by a fuel ethanol plant, Novozymes requests alternative relief in the form of a new trial under Rule 59. *See infra* § III.C.

transfer, all the indicators that we have of fouling resumed essentially back to where we were with no phytase at all.” Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 65:23–66:11. But again, as construed by the Court, the claims do not require that phytate deposit formation be reduced beyond the threshold necessary to impact commercial indicators of fouling, such as by improving heat transfer, decreasing differential pressure, or reducing cleaning frequency in a fuel ethanol plant. All that is required is that less phytate form deposits than in the absence of phytase. Indeed, the asserted claims require no minimum dosage of phytase, reflecting the inventors’ own expectation that the addition of any amount of phytase suffices to reduce formation of phytate deposits. *See infra* at 11 n.5. Nothing in the specification or claims of the ’137 and ’399 patents suggests otherwise.

As it is undisputed that phytase breaks down phytate, and that the degradation products of phytate cannot form phytate deposits, addition of phytase to ethanol processing fluid necessarily reduces the formation of phytate deposits. When added to ethanol processing fluid, no matter the purpose, phytase does what it always does—it degrades phytate. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 125:5–10 (Flanegan) (agreeing that “if the phytase is functioning in the environment that it’s in . . . there will be some breaking down of the bonds that form that phytic acid”); Dkt. No. 815, Trial Tr. (Oct. 11, 2017 p.m.) at 75:2–3 (Dorn) (admitting that “the big stuff, the stuff we’re talking about here, fouling and how chemistry works, that doesn’t change”); DTX 2094 at 021 (2006 Genencor presentation showing addition of phytase to substrate prep tank for fermentation with observation “reduced phytate”); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 136:15–137:23, 138:25–139:2, 140:4–24, 141:8–16 (Flanegan) (discussing DTX 2094 at 021). That is as true for Veit, which was previously found by this Court to disclose all of the other limitations of the asserted claims, as it is for the ’137 and ’399 patents. As there is less

phytate following addition of phytase according to Veit than there would have been absent that addition, formation of phytate deposits will be reduced.

b. Example One of Veit Discloses a Specific Phytase and a Specific Dosage that Degrades All Phytate in Ethanol Processing Fluid, and Thus Necessarily Reduces Phytate Deposition

In addition, Veit discloses a specific and inherently anticipating embodiment in Example 1. Specifically, Example 1 teaches that addition of phytase derived from the fungus *Peniophora lycii* to ethanol processing fluid at a dosage of 1 FYT/g DS results in degradation of all phytate by the end of fermentation, observing that the “phytase efficiently hydrolyses the phytin below the detection level.”³ DTX 2069 at 12:30–31, 16:30–17:28; *id.* at 026 (Fig. 3); *see also* Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 146:7–147:3, 148:2–6, 148:23–149:1 (Flanegan). Dr. Kohl explained that a skilled artisan would understand that observation to mean “that the phytase destroyed all the phytate, all the phytic acid salts, and they’re no longer present.” Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 9:19–10:4. U.S. Water’s technical experts did not contradict Dr. Kohl’s conclusion that Example 1 teaches a person of skill in the art that under the conditions disclosed, 1 FYT/g DS phytase degrades all of the phytate in the ethanol processing fluid.

Critically, *in the absence of any phytate, no deposits of phytate can form*, and thus formation of phytate deposits is necessarily reduced. *Id.* at 10:5–8 (Kohl) (“If there is no phytate present, it is impossible to get fouling from phytate.”). Neither of U.S. Water’s technical experts disputed this basic principle. When asked about Example 1, Mr. Dorn testified:

³ The asserted patents list phytase derived from *Peniophora* as being among the phytases that can be used in the claimed method. *See, e.g.*, DTX 2001 at 5:63–67.

Q. And you talked about how much phytate needs to be reduced. You do recognize, don't you, that if you reduce all of the phytate, so there's none left, that you cannot get any deposit reduction that's phytate, correct?

A. So I would say that as long as the phytate is fully reacted and the test method was done properly to make sure that that was the correct result, yes. If all of the phytic acid salts are decomposed, they then could not participate in deposit formation.

Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 74:4–12. Mr. Flanegan's testimony was strikingly similar:

Q. So, Mr. Flanegan, if you accept what is expressly stated in Veit, which is “we hydrolyze the phytic acid below detection levels,” do you agree that no phytic acid deposits can form in those circumstances?

A. If all of their reporting is correct and there's, as Mr. Dorn testified, there's really truly nothing left at the end, then I don't think phytic acid fouling or deposits would occur.

Id. at 149:7–14.

Instead, U.S. Water argued at trial that Example 1 is insufficient to establish inherent anticipation because *all* of the embodiments disclosed by Veit must necessarily reduce deposit formation.⁴ *See, e.g.*, Dkt. No. 826, Trial Tr. (Oct. 18, 2017 a.m.) at 116:20–117:4 (U.S. Water closing argument); *see also* Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 149:15–150:1 (Flanegan) (“So the advice that I was given by counsel on whether it necessarily would have to happen was that, yes, any of these ranges and any of these enzymes would necessarily have to result in what was then disclosed in the U.S. Water patent.”). But as a matter of law, that assertion is incorrect.

There is no evidence in the record that any embodiments disclosed by Veit would not reduce formation of phytate deposits. But even setting that aside, the Federal Circuit has long

⁴ Because that argument was legally incorrect and prejudicial to Novozymes, if the Court declines to grant this motion for judgment as a matter of law, Novozymes requests in the alternative that a new trial be granted under Rule 59. *See infra* § III.B.

rejected the notion that non-anticipatory embodiments somehow negate an anticipatory embodiment in the same reference. *See, e.g., Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1376 (Fed. Cir. 2005) (“This court rejects the notion that one of these ingredients cannot anticipate because it appears without special emphasis in a longer list.”); *Arthrocare Corp. v. Smith & Nephew, Inc.*, 406 F.3d 1365, 1371–72 (Fed. Cir. 2005) (in reversing district court’s denial of defendant’s motion for judgment as a matter of law that prior art anticipated asserted claims, finding that the court erred because it “focused on only one embodiment” that did not anticipate and ignored the anticipatory embodiments in the same prior art reference); *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1324 n.6 (Fed. Cir. 2003) (“The anticipation analysis asks solely whether the prior art reference discloses and enables the claimed invention, and not how the prior art characterizes that disclosure *or whether alternatives are also disclosed.*” (emphasis added)). That same principle applies equally in the inherency context. For example, the Federal Circuit in *Leggett & Platt, Inc. v. Vutek, Inc.* rejected the patentee’s request that summary judgment of inherent anticipation be reversed, as its argument “relie[d] on the erroneous assumption that the disclosure of multiple examples renders one example less anticipatory.” 537 F.3d 1349, 1356 (Fed. Cir. 2008); *see also id.* at 1354–55 (“We can, however, conclude as a matter of law that the ’823 patent inherently discloses LEDs that are ‘effective to impinge sufficient UV light on the ink to’ cure the ink to a great extent.”). U.S. Water’s arguments at trial suffered from the same legal flaw.

Nor does the disclosure of ranges in Veit in any way change the result. Although Veit discloses phytase dosage ranges of varying specificity, Example 1 discloses a single dosage point (1 FYT/g DS) of a particular phytase (*P. lycii*) that degrades all phytate and thus necessarily reduces formation of phytate deposits. No more is required to anticipate the asserted claims,

even for those asserted claims that themselves specify a dosage range.⁵ See *Ineos USA LLC v. Berry Plastics Corp.*, 783 F.3d 865, 869 (Fed. Cir. 2015) (“When a patent claims a range, as in this case, that range is anticipated by a prior art reference if the reference discloses a point within the range.”); *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346, 1349–50 (Fed. Cir. 1999) (affirming judgment of anticipation where district court had determined that at a particular point within the claimed range, which point was “common to the [Asserted] Patent” and the prior art, “there is *inherently* sufficient aeration” (emphasis added)). And even if that were not the case, there is no dispute that Veit’s preferred dosage ranges fall entirely within the dosage ranges of the asserted claims.⁶ U.S. Water has offered no evidence that any particular dosage or range of dosages is “critical” within those claimed ranges. See *Ineos*, 783 F.3d at 869–70 (holding that where prior art discloses its own range rather than a specific point, the prior art anticipates unless the patentee demonstrates that “the range claimed is critical to the operability of the invention”). Nor did U.S. Water introduce any evidence that particular dosages within Veit’s preferred dosage ranges do not reduce formation of phytate deposits.

The analysis of Example 1 of Veit offered at trial by U.S. Water’s technical expert Mr. Flanegan is immaterial to the fundamental point that Example 1 demonstrates total phytate degradation. First, Mr. Flanegan noted that Example 1 uses a phytase dose 200 times higher than

⁵ Claim 12 of the ’137 patent requires “adding phytase to a concentration of 500 ppm or less in the ethanol processing fluid.” DTX 2001. Claims 7 and 18 of the ’399 patent require that “phytase is present in the ethanol processing fluid in an amount of 100 ppm or less.” DTX 2002. Claims 8 and 19 of the ’399 patent require that “phytase is present in the ethanol processing fluid in an amount of 20 ppm or less.” *Id.* Claims 9 and 20 of the ’399 patent require that “phytase is present in the ethanol processing fluid in an amount of 10 ppm or less.” *Id.*

⁶ A phytase dosage of 10 ppm or less is within all of the asserted claims. See *supra* at 11 n.5. This Court previously found that 10 ppm phytase is equivalent to 33 FYT/g DS, as defined by Veit. Dkt. No. 561, Summary Judgment Order at 20. Of the preferred ranges disclosed by Veit, the highest dosage is 25 FYT/g DS. DTX 2069 at 8:13–15; see also *infra* at 12.

the lowest dose disclosed by Veit. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 107:7–108:6. But this dose (1 FYT/g DS) is equivalent to less than 0.5 ppm phytase, well within the ranges of the asserted claims that include a dosage limitation. *See id.* at 149:7–14; Dkt. No. 561, Summary Judgment Order at 20 (noting that 1.52 FYT/g DS is equivalent to 0.5 ppm). It is irrelevant that Veit also includes embodiments that use lower and higher doses of phytase. Second, Mr. Flanegan observed that Example 1 describes adding phytase in saccharification rather than fermentation. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 107:7–22. But saccharification, like fermentation, is a fuel ethanol production step containing “ethanol processing fluid,” and Veit’s description of adding phytase in either step meets the claim limitations that require “adding phytase to ethanol processing fluid.” In short, neither of Mr. Flanegan’s observations alters the undisputed fact that the phytase in Example 1 worked and degraded all of the phytate in the ethanol processing fluid. Example 1 is, therefore, an anticipatory embodiment, regardless of whether other embodiments are or are not.

c. Other Dosage Embodiments of Veit Also Necessarily Reduce Formation of Phytate Deposits

In addition to the dosage of 1 FYT/g DS disclosed in Example 1, Veit also discloses additional preferred dosage embodiments in the form of increasingly narrow ranges: 0.005–25 FYT/g DS (preferred range), 0.01–10 FYT/g DS (more preferred range), and 0.1–1 FYT/g DS (narrowest range). DTX 2069 at 8:13–15; *see also* Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 113:20–25, 114:9–23 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 143:16–144:8 (Flanegan). Although Example 1 suffices to establish inherent anticipation, *see supra* § II.B.1.b, these additional embodiments also necessarily reduce formation of phytate deposits. As already explained, that is because phytase degrades phytate, thus decreasing the amount of phytate that forms deposits in ethanol processing equipment. *See supra* § II.B.1.a.

That this is so is confirmed by real-world data. Of the six named Phytaflow customers who were deposed, all apply Phytaflow dosages within the preferred, most preferred, and narrowest ranges disclosed by Veit. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 15:13–16:17 (Kohl). Specifically, Aemetis doses 0.107 FYT/g DS phytase, Calgren doses 0.473 FYT/g DS phytase, Dakota Ethanol doses 0.243 FYT/g DS phytase, Kansas Ethanol doses 0.507 FYT/g DS phytase, Nesika doses 0.397 FYT/g DS phytase, and Southwest Georgia Ethanol doses 0.363 FYT/g DS phytase. *Id.* at 14:12–15:2 (Kohl). It is undisputed that these dosages reduce formation of phytate deposits at the six plants to an extent the plants found commercially acceptable. *See id.* at 74:1–13 (Kohl) (agreeing that Phytaflow works and reduces deposits at the eight named plants); Dkt. No. 815, Trial Tr. (Oct. 11, 2017 p.m.) at 49:3–8 (Dorn) (explaining with respect to Phytaflow that “you add it, and the fouling is reduced, and [Phytaflow customers] have a benefit”); *id.* at 57:8–19 (Dorn) (testifying with respect to the eight named Phytaflow customers that “in all cases [Phytaflow] helped with what I would consider fouling”); *id.* at 75:8–21 (Dorn) (“Phytaflow and pHytOUT were adopted by this industry because it met a need and it worked and it did what they said it did.”); Dkt. No. 829, Trial Tr. (Oct. 12, 2017 a.m.) at 10:22–11:25 (Dorn) (agreeing that phytate deposition is necessarily reduced at the dosages recommended for Phytaflow use). The same is true for pHytOUT, which U.S. Water recommends be added to ethanol processing fluid at even lower doses. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 111:7–25 (Kohl) (explaining that pHytOUT dosage is equivalent to 0.015 FYT/g DS and reduces phytate deposition). U.S. Water offered no evidence to the contrary.

As for Veit dosages at the high ends of the disclosed ranges and greater than those actually used by Phytaflow customers, U.S. Water’s witnesses agreed that adding “too much” phytase (i.e., more than what is required for a commercially effective dose) has no negative

consequences other than increased cost to fuel ethanol plants, and that formation of phytate deposits will continue to be reduced. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 42:3–7 (McCoy) (“And there’s no such thing as too much pHyOUT, except that [the customers are] paying for it.”); *see also id.* at 145:11–146:6 (Flanagan).

2. This Court Should Grant Novozymes Judgment as a Matter of Law for the Same Reason It Granted Novozymes Summary Judgment

In granting summary judgment of inherent anticipation to Novozymes, this Court found that Veit necessarily reduces phytate deposit formation because it discloses “the same chemical process through which phytase breaks down phytic acid.” Dkt. No. 561, Summary Judgment Order at 26–27. That decision was vacated on appeal when the Federal Circuit found that a genuine dispute of fact regarding inherency precluded summary judgment. But on remand, U.S. Water failed to introduce any of the evidence it had claimed on appeal created a genuine dispute. No such evidence exists.

In seeking to overturn summary judgment to Novozymes, U.S. Water argued on appeal that the district court erroneously ignored a genuine dispute on this issue, based on the Court’s statement that “U.S. Water has adduced evidence . . . that practicing Veit . . . will not *always* result in deposit reduction.” Corrected Nonconfidential Brief of Plaintiffs-Appellants (“U.S. Water App. Br.”), Nos. 2015-1950 & 2015-1967, 2015 WL 6948860, at *1–2 (Fed. Cir. Nov. 2, 2015) (quoting Dkt. No. 561, Summary Judgment Order at 27). In particular, U.S. Water asserted to the Federal Circuit that its inventors had developed a “sophisticated recipe of phytase amounts, conditions, concentrations, and parameters of use in order to effectuate reduction in the formation of deposits.” *Id.* at *10. And furthermore, U.S. Water contended, its technical experts would establish that absent that “sophisticated recipe,” addition of phytase might not reduce deposit formation because that deposition follows zero-order kinetics. *Id.* at *14–16, *19 (“The

kinetics of phytic acid deposition also means that one easily could add enough phytase to accomplish the purpose of Veit and yet never achieve a reduction in the formation of deposits because the amount of phytic acid remaining in solution would result in the same amount of deposit formation.”). Based on U.S. Water’s representations of its evidence, the Federal Circuit vacated the Court’s summary judgment order. *U.S. Water Servs., Inc. v. Novozymes A/S*, 843 F.3d 1345, 1351–52 (Fed. Cir. 2016).

At trial, however, U.S. Water failed to make good on the representations it made on appeal. None of U.S. Water’s witnesses testified that the asserted patents teach “a sophisticated recipe of phytase amounts, conditions, concentrations, and parameters of use”—let alone that this recipe is somehow required to achieve reduced formation of phytate deposits. Indeed, they could not have done, as there is no basis for any such testimony. As for the zero-order kinetics theory espoused by expert witness Mr. Dorn, it was excluded by this Court as being unsupported for phytate deposition in fuel ethanol production. Dkt. No. 728, Final Pretrial Conference Order at 14.

As explained above, it is also demonstrably the case that, as the Court found in its summary judgment decision, Veit’s teachings necessarily result in reduced formation of phytate deposits given the undisputed role of phytase in degrading phytate. *See supra* § II.B.1. Thus, for the same reasons that the Court originally granted Novozymes summary judgment of inherent anticipation, it should now grant judgment as a matter of law on the same issue.

3. U.S. Water’s Patents Unfairly and Impermissibly Prevent Fuel Ethanol Plants from Implementing Known Prior Art Methods

The Federal Circuit has repeatedly observed that “practicing the prior art” is not a defense to patent infringement. *See, e.g., Tate Access Floors v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1365–66 (Fed. Cir. 2002). But it is also black-letter patent law that products and

processes already in the public domain cannot be removed through patenting, regardless of whether their principles of operation are understood. *Atlas Powder*, 190 F.3d at 1348 (“The public remains free to make, use, or sell prior art compositions or processes, regardless of whether or not they understand their complete makeup or the underlying scientific principles which allow them to operate. The doctrine of anticipation by inherency, among other doctrines, enforces that basic principle.”); *see also In re Wiseman*, 596 F.2d 1019, 1023 (C.C.P.A. 1979) (holding that a patent on “a structure suggested by the prior art, and, hence, potentially in the possession of the public” is invalid because such a patent “would remove from the public that which is in the public domain by virtue of its inclusion in, or obviousness from the prior art”). Nor does it matter whether all of the benefits of products or processes in the prior art are appreciated or described. *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1376 (Fed. Cir. 2001) (rejecting plaintiff’s argument that “new uses of old processes are patentable” because, while true, “the claimed process here is not directed to a new use; it is the same use, and it consists of the same steps as described by [the prior art reference]”); *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 633 (Fed. Cir. 1987) (finding that recognition of a new aspect of a known process is not a patentable invention of a novel process). Accordingly, the Federal Circuit has also observed that where “an accused infringer is clearly practicing only that which was in the prior art, and nothing more, and the patentee’s proffered construction reads on the accused device, meeting [the clear-and-convincing] burden of proof for invalidity should not prove difficult.” *Tate Access*, 279 F.3d at 1367.

The *Tate Access* maxim applies here. Novozymes’ instructions for Phytaflow use, provided in the application sheet accompanying the product, adhere strictly to the method taught in Veit. DTX 2240; Dkt. No. 816, Trial Tr. (Oct. 13, 2017 p.m.) at 56:25–57:11 (Schnurrer)

(testifying that the application sheet “is the authorized version of how to use the product”). Specifically, the Phytaflow application sheet instructs customers that “Phytaflow can only be applied to fermentation tanks,” and recommends a dosage range of “0.00045 - 0.0018 % w/w corn as is (1.5 - 2.5 gallons/800,000 gallon fermenter).” DTX 2240 at 002; *see also* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 62:17–63:4 (Kohl); *see also* Dkt. No. 816, Trial Tr. (Oct. 13, 2017 p.m.) at 20:17–21:8 (Rogers). Neither instruction deviates from what is taught by Veit, as Veit teaches adding phytase to fermentation or saccharification, and the recommended dosage range for Phytaflow⁷ falls within the narrowest dosage range (0.1–1 FYT/g DS) disclosed by Veit. *See* DTX 2069 at 2:16–21, 8:6–15. And the fuel ethanol plants who purchase Phytaflow for fouling control achieve a reduction in phytate deposits by using Veit’s prior art method, specifically by adding phytase during fermentation at dosages that fall within Veit’s most preferred range. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 15:13–16:17 (Kohl); *see supra* § II.B.1.c. To now prevent these plants from continuing to use Phytaflow in accordance with Novozymes’—and Veit’s—instructions would impermissibly remove a known method from the public domain, simply because U.S. Water claims to have identified a new “benefit” of that known method.

C. The Asserted Patents Are Obvious Over the Combination of Veit and Caransa

Even if a reasonable jury could have somehow found that Veit does not necessarily reduce formation of phytate deposits (and it could not have), the evidence at trial mandates a

⁷ Dr. Kohl testified that 0.1–1 FYT/g DS phytase is equivalent to 0.5–5 gallons Phytaflow per 750,000 gallon fermenter. Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 114:24–115:3, 115:8–14. That testimony was not disputed by any U.S. Water expert. Applying the same conversion factor to the recommended dosage range in the Phytaflow application sheet yields a phytase dosage of 0.3–0.5 FYT/g DS.

finding that the asserted claims are rendered obvious by the combination of Veit with a second prior art reference, U.S. Patent No. 4,914,029 (“Caransa”). A patent is invalid “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date . . . to a person having ordinary skill in the art.” 35 U.S.C. § 103. Of particular relevance here, the Supreme Court has held that a “combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Obviousness also requires a showing that a person of ordinary skill would have been motivated to combine the asserted prior art references with a reasonable expectation of success. *Bristol-Myers Squibb Co. v. Teva Pharm. USA, Inc.*, 752 F.3d 967, 973 (Fed. Cir. 2014).

Together, Veit and Caransa disclose all of the limitations of the asserted claims. Veit expressly describes all of the steps of the claimed method, save for the benefit of reducing the formation of phytate deposits. *See supra* at 2. Caransa describes phytic acid as a source of undesirable phytate deposits, and specifically identifies the application of phytase as a means to reduce or eliminate those deposits. A person of ordinary skill in the art would not only have been highly motivated to combine these two references, but also would have expected that combination to yield entirely predictable results. No reasonable jury could have concluded otherwise.

1. Caransa Expressly Discloses Using Phytase to Reduce or Eliminate the Formation of Phytate Deposits

Caransa was filed on September 12, 1988 and issued on April 3, 1990. DTX 2050 at 001. It predates the filing of U.S. Water’s priority patent application by more than seventeen years. Caransa describes a method of using a phytase to reduce or eliminate phytate deposits in wet milling. *Id.* at Abstract; *see also* Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 69:8–9, 69:13–

16, 97:7–10 (Kohl). The method derives from the following observations described in the specification:

Phytic acid usually appears in the form of calcium and magnesium salts, which, as a class, are called phytin.^[8] A large part of the phosphorus present in plants is stored in these compounds. In the steeping process [of wet milling] most of the phytic acid reports to the CSL [corn steep liquor]. It forms an undesirable component therein for at least the reasons enumerated below:

- (1) The phytic acid in CSL tends to deposit a sludge with proteins and metal ions. This has caused problems in concentrating by evaporation and in transporting and storing the CSL.
- (2) When used as a nutrient in microbial fermentation, CSL is diluted and the pH is raised to 4-5. When this medium is sterilized, the phytic acid forms a precipitate coating on the inner surface of the fermenter. This precipitate is hard to scrub off afterwards and it also interferes with the purification of the fermentation end products.

DTX 2050 at 1:33–51. As this discussion reveals, not only did the Caransa inventors observe that a large portion of the phosphorus in the plant material used in wet milling is in the form of “phytin,” but they also identified the formation of a “sludge” and “precipitate” as among the “undesirable” features of phytin in wet milling.

Caransa teaches reducing or eliminating this undesirable sludge and precipitate by steeping the corn used in wet milling in the presence of a phytase to break down the phytic acid. DTX 2050 at 2:11–14; *see also* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 27:7–19 (Kohl). Specifically, Caransa teaches the use of “phytin-degrading enzymes” (i.e., phytases) to create corn steep liquor “that does not contain phytin” for use in a fermentation process. DTX 2050 at 3:40–45; *see also* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 23:5–13, 25:19–26:4, 27:20–28:3 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 160:16–20 (Flanagan) (“I agree that

⁸ It is undisputed that “phytin” is another term for “phytate” or “salts of phytic acid.” Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 62:17–64:8 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 148:23–149:1 (Flanagan).

Caransa does teach adding phytase to corn steep liquor, the steeping process, to reduce phytic acid. So I think – they say eliminate or reduce”).

Caransa includes several examples that demonstrate this method. In one example, the inventors measured phytin levels during incubation of corn steep liquor in the presence of a phytase and reported that phytin was reduced to zero. DTX 2050 at 5:22–48 (Table D indicating that in “exp. (a),” phytin levels in CSL were “0” after twenty-four hours of enzymatic treatment); *see also* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 29:11–22 (Kohl). It is undisputed that if there is no phytin, there can be no phytin-based deposits. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 30:14–16 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 149:7–14 (Flanegan); *id.* at 74:4–12 (Dorn).

2. Veit and Caransa Disclose All Limitations of the Claimed Invention and Render the Asserted Claims Obvious

As explained above, this Court has already concluded as a matter of law that Veit expressly discloses all of the elements of the asserted claims but one—reducing the formation of deposits of insoluble phytic acid or phytic acid salts in plants that produce fuel ethanol. *See supra* § II.B. Caransa not only expressly discloses using phytase to reduce the formation of phytate deposits, *see supra* § II.C.1, but its disclosure also overlaps significantly with that of Veit. For example, like Veit, Caransa discloses adding phytase for the purpose of breaking down phytic acid. *See* DTX 2050 at Abstract; *see also* *supra* § II.C.1. Caransa also discloses adding phytase at a temperature “maintained in the range 20°–60° C, and generally about 50° C,” and at a pH of around 5.0–5.5. DTX 2050 at 2:67–3:1, 4:4–7, 5:5.

In sum, Caransa expressly teaches the same, well-known phytase reaction also taught by Veit and the same benefit belatedly claimed by U.S. Water—i.e., reducing or eliminating phytin to reduce or eliminate deposits. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 28:4–16 (Kohl).

The use of phytase to break down the phytic acid responsible for the formation of phytate deposits in fuel ethanol plants is nothing more than “the predictable use of prior art elements” taught in Veit and Caransa “according to their established functions” to “yield predictable results.” *See KSR*, 550 U.S. at 416–17.

3. A Person of Ordinary Skill Would Have Been Motivated to Combine the Teachings of Veit and Caransa

It is beyond dispute that a person of ordinary skill in the art would have been motivated to combine Veit’s teachings with those of Caransa. The teachings in both Veit and Caransa are premised on the undesirability of phytate. DTX 2069 at 7:30–36; DTX 2050 at Abstract, 1:35–52; Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 20:7–17, 30:17–31:1 (Kohl). Both Veit and Caransa are concerned with methods for processing grain (in particular, corn) that are common to the production of fuel ethanol—i.e., wet milling (Veit and Caransa) and dry milling (Veit). DTX 2069 at 2:31–3:4; DTX 2050 at Abstract, 1:35–52, 2:11–14; Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 20:7–17, 30:17–31:15 (Kohl). And both rely on the same, well-known reaction of phytase with phytic acid to break down phytic acid and reduce or eliminate the formation of phytate deposits. DTX 2069 at 7:30–36; DTX 2050 at Abstract, 1:35–52; Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 20:7–17, 30:17–31:1 (Kohl).

U.S. Water’s contention at trial that “Caransa is about wet milling and . . . doesn’t mention the kind of deposits that happen in fuel ethanol plants” is not a credible description of the prior art. *See* Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 111:7–12 (Flanagan). It is undisputed that wet milling is, and was at the time of the invention, a well-known method of fuel ethanol production. Wet milling has been used since at least the 1980s, and was, in fact the dominant method of fuel ethanol production in the 1980s when the application for the Caransa patent was filed. Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 42:23–43:5 (Kohl); Dkt. No.

833, Trial Tr. (Oct. 17, 2017 a.m.) at 153:20–25 (Flanagan) (“Most of the fuel ethanol plants in the 1980s were wet mills.”). Moreover, a person of ordinary skill in the art would appreciate that following the teachings of Caransa would effectively reduce phytate deposits *anywhere they might form*, including in fuel ethanol plants. The claimed invention is not limited to wet milling or dry milling, and it does not matter whether the corn used in fuel ethanol production is initially processed by milling (dry mill) or steeping (wet mill), and no reasonable jury could conclude otherwise. *See* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 35:23–37:7 (Kohl).

U.S. Water’s suggestion that combining Veit and Caransa reflects reliance on impermissible “hindsight” is belied by the evidence at trial. The inventors themselves, Roy Johnson and Paul Young, located Veit and Caransa and submitted both to the Patent Office during prosecution of the asserted patents, reflecting that they at least believed the teachings of both references had some bearing on the subject matter of their purported invention. DTX 2012 at 003 (Information Disclosure Statement submitted to the PTO on October 14, 2011); *see also* Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 156:10–16 (Flanagan). The Examiner cited Caransa against earlier versions of the asserted claims during prosecution, and specifically discussed this prior art in an office action rejecting those claims. DTX 2012 at 081. The inventors did not distinguish Caransa during prosecution on the basis that it was irrelevant, or art from a dissimilar field, as U.S. Water contended at trial. Rather, they distinguished Caransa on the basis that the claimed invention was “not limited to wet milling, but applies at least as well to dry milling” DTX 2003 at 258; *see also id.* at 253–255.

On these facts, combining Veit and Caransa does not reflect impermissible “hindsight,” but rather a proper combination because both Veit and Caransa are “reasonably pertinent to the particular problem with which the inventor[s] [were] involved.” *Tyco Healthcare Grp. LP v.*

Ethicon Endo-Surgery, Inc., 774 F.3d 968, 979 (Fed. Cir. 2014) (quotation omitted) (finding that two references were properly combined to render the asserted claims obvious, even though they “d[id] not share the same field of endeavor,” because both references dealt with the structure of surgical instruments, as did the patented invention).

4. “Secondary Considerations” Cannot Save U.S. Water’s Patents from a Judgment of Obviousness

“Secondary considerations” of non-obviousness are relevant only in “a close case where all other proof leaves the question of invention in doubt.” *See Dow Chem. Co. v. Halliburton Oil Well Cementing Co.*, 324 U.S. 320, 330 (1945); *see also Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1371 (Fed. Cir. 2011) (“A strong case of *prima facie* obviousness, such as that presented here, cannot be overcome by a far weaker showing of objective indicia of nonobviousness.”). For the reasons already explained, this is not a close case.

At trial, U.S. Water argued the following secondary considerations: (1) that the inventors achieved unexpected results, (2) that others were skeptical that the invention would work, (3) that Novozymes copied U.S. Water’s patents, (4) that there was long-felt need for the invention, and (5) that others tried but failed to achieve the invention. None of the evidence U.S. Water presented at trial concerning these considerations support the jury’s verdict that the asserted claims are not obvious.

a. U.S. Water’s Purported “Discovery” Was Expected, Not Unexpected

U.S. Water certainly has not shown its invention reflects unexpected results. To the contrary, it is undisputed that the composition of the deposits that form in fuel ethanol plants could easily be determined by standard methods. *See DTX 2001 at 3:65–4:7* (“[T]he deposit or materials susceptible to deposit . . . may be identified by standard methods known to those of skill in the art . . .”). It is also undisputed that phytase breaks down phytic acid and salts of

phytic acid and that this reaction has been known since well before the filing of the priority patent application. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 35:11–15 (Kohl); Dkt. No. 833, Trial Tr. (October 17, 2017 a.m.) at 125:5–15, 149:7–14 (Flanegan); *see also* Dkt. No. 815, Trial Tr. (Oct. 11, 2017 p.m.) at 49:3–8, 59:4–9 (Dorn). Given these undisputed facts, a person of ordinary skill in the art would have *expected* the application of phytase to reduce or eliminate the formation of undesirable phytic acid deposits.

The process by which Dr. Young arrived at the purported invention confirms how very expected it was. In January 2007, Dr. Young was an admitted novice in the field; he had not “even . . . heard of phytase at that time,” and had no significant experience with enzymes. Dkt. No. 776, Young Dep. Tr. at 23:4–25. He received a publicly available article from a co-worker on January 22, 2007 entitled “Phytase: Basics of Enzyme Function.” *Id.* at 53:23–54:8 (discussing Young Dep. Ex. 1031, DTX 2398 (“Purdue Article”)). As its title suggests, the Purdue Article describes the “basics” of phytases: what they are, how they act, and specifically what they act *upon*. Among other things, the Purdue Article describes that phytin forms “complexes” with metals like magnesium and that corn contains phytin. *See* DTX2398 at 003. The article then describes how phytase can be used to break down phytic acid and eliminate the formation of these complexes. *Id.* at 002–003 (“Phytase is the only recognized enzyme that can initiate the release of phosphate from phytin . . .”); *id.* at 003–004 (describing “Phytin” and “Phytase”); *see also* Dkt. No. 776, Young Dep. Tr. at 52:8–53:12 (admitting that “the enzymatic activity of phytases had been known for quite a long time”).

Two days later, on the basis of what he read in the Purdue Article about the phosphorus content of phytic acid, Dr. Young wrote to his colleagues that “[i]f 80% of the P is phytic acid, it could easily be magnesium phytate that is precipitating in the cook water and liquifaction [sic]

pump.” DTX 2368 at 001; Dkt. No. 776, Young Dep. Tr. at 284:6–21, 285:9–15 (admitting that he obtained the 80% figure from the Purdue Article). He also concluded that “[i]f mag phytate is much less soluble than mag phosphate (likely), the phytase enzyme could do the job.” *See* DTX 2368 at 001; DTX 2363 at 002–003; Dkt. No. 776, Young Dep. Tr. at 43:5–10; *see also id.* at 288:23–289:14.

These facts are not in dispute. They show that a person with even less skill than a person of ordinary skill in the art (and indeed, a person who had never before heard of phytase) was able to read a publication on the “basics” of phytase and phytic acid, and conclude in the space of two days that deposits in fuel ethanol plants likely contained phytate, and a phytase could break down the phytates to reduce or eliminate these deposits. It is this discovery that U.S. Water attempts to characterize as revolutionary, unexpected, and non-obvious. But there can be no question that U.S. Water’s “invention” merely takes what was known about phytases and phytate deposits and applies that pre-existing knowledge in a wholly predictable and scientifically expected way. After all, as U.S. Water’s expert Mr. Dorn agreed, simply knowing that something is a phytate could drive a person toward a phytase. *See* Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 67:23–68:9; *see also id.* at 43:9–44:5 (McCoy) (admitting that the results of the claimed method were *not* unexpected, as U.S. Water “anticipated there would be a reduction” in acid usage due to phytase prior to U.S. Water’s first phytase trial).

In closing argument, the only evidence that U.S. Water cited as evidence of unexpected results was “Novozymes documents,” which were not identified:

Unexpected results. There’s no chance I can describe it any better than Novozymes’s documents. Unexpected results? I think phytase causes fouling. I’m not talking about protein fouling, I’m talking about phytase or phytic acid fouling. That’s what they’re talking about. Again, that is the epitome of an unexpected result. There’s a huge problem out there. That’s not the solution. That won’t work. But it did.

Dkt. No. 826, Trial Tr. (Oct. 18, 2017 a.m.) at 119:7–14. U.S. Water’s counsel can only have been referring to an email from Novozymes employee Malcolm Johal, in which he states that “[i]f you add phytase, you solublize [sic] the phytate which may make it more likely to foul.” PTX 47 at NZ-USW00003855. However, this statement refers to an increase in *mineral scale fouling* due to phytase causing the release of phosphate and minerals, not to an increase in *phytate fouling*. See *id.*; see also Dkt. No. 824, Trial Tr. (Oct. 24, 2017 p.m.) at 115:3–16 (Kohl (“[B]ecause you’re converting the phosphates that are on the phytic acid into free orthophosphate and you’re also freeing up the metals [when you use a phytase], . . . it would not be unexpected to see deposits that have minerals in them because you have freed them up more.”)). Mr. Johal’s email does not reflect any surprise that phytase would reduce *phytate fouling*, and certainly does not support U.S. Water’s claim of “unexpected results.”

Finally, even if it were somehow surprising that addition of phytase to fermentation reduces formation of phytate deposits, that is not sufficient for U.S. Water to establish the secondary consideration of unexpected results. That is because “unexpected results must be commensurate in scope with the claims.” *Genetics Inst., LLC v. Novartis Vaccines & Diagnostic, Inc.*, 655 F.3d 1291, 1309 (Fed. Cir. 2011). Although “absolute identity of scope” is not required, unexpected results are not established by evidence “plainly disproportionate to the scope of the claim.” *Id.*; see also, e.g., *In re Greenfield*, 571 F.2d 1185, 1189 (C.C.P.A. 1978) (“Establishing that one (or a small number of) species gives unexpected results is inadequate proof, for it is the view of this court that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.” (internal quotation omitted)). Here, the asserted claims encompass addition of phytase *anywhere* in the fuel ethanol production process, provide no minimum phytase dosage, and place few limitations

on operating conditions. U.S. Water has not shown unexpected results commensurate with these many variables, and indeed has taken contrary positions in opposing a finding of inherent anticipation by Veit.

b. Others Were Not Skeptical of U.S. Water’s Invention

Inventor Roy Johnson testified that the invention was met with “skepticism,” *see* Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 95:16–96:2, but what he described was the “skepticism” of potential customers of U.S. Water. This is not the same “skepticism” that is recognized as a relevant secondary consideration. *See Bayer Healthcare Pharm., Inc. v. Watson Pharm., Inc.*, 713 F.3d 1369, 1377 (Fed. Cir. 2013). Rather, there must be a “nexus between the merits of the claimed invention and evidence of” such skepticism. *Muniauction, Inc. v. Thomas Corp.*, 532 F.3d 1318, 1327 (Fed. Cir. 2008) (quoting *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000)) (reversing denial of judgment as a matter of law of obviousness, and finding that skepticism from investment banks that could be disadvantaged by certain but not all embodiments of the invention lacked the requisite nexus to the claimed invention).

The “skepticism” Mr. Johnson described was merely the reluctance of fuel ethanol plants to switch to a new product from an inexperienced enzyme supplier, whose product offering risked disrupting a functioning fuel ethanol production process. Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 95:16–96:2. Mr. Johnson acknowledged that U.S. Water “didn’t have credibility” in the area of enzymes or deposit reduction. *Id.* at 96:2–4. This evidence therefore fails to establish the required nexus between the *claimed invention* and the purported skepticism of customers, as it does not show that any person of ordinary skill in the art was skeptical that the claimed invention would function as described in the patents, which is what the law requires.

See Dow Jones & Co. v. Ablaise Ltd., 606 F.3d 1338, 1352 (Fed. Cir. 2010) (affirming

obviousness finding and rejecting evidence of skepticism that “d[id] not directly address whether there was actual skepticism concerning the invention” and whether the invention was feasible).

U.S. Water’s evidence of so-called “skepticism” cannot, as a matter of law, rebut the undisputed evidence of obviousness.

c. Novozymes Did Not Copy the Claimed Invention

U.S. Water did not present any evidence that Novozymes attempted to copy the claimed invention. Rather, the evidence at trial showed that Novozymes independently developed what became the Phytaflow product in response to customer demand.

“Copying” for purposes of secondary considerations of non-obviousness requires “evidence of efforts to replicate a specific product, which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica, or access to the patented product combined with substantial similarity to the patented product.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) (reversing jury’s verdict of non-obviousness, finding plaintiff offered no evidence of copying, and further noting that “[n]ot every competing product that arguably falls within the scope of a patent is evidence of copying”). U.S. Water presented no such evidence.

U.S. Water argued at trial that because Novozymes learned of U.S. Water’s patent applications before it began offering Phytaflow, and because Novozymes offered Phytaflow in competition with U.S. Water’s pHytOUT, Novozymes “copied” pHytOUT. *See, e.g.*, Dkt. No. 826, Trial Tr. (Oct. 18, 2017 a.m.) 35:2–6, 36:23–37:1, 118:19–23 (U.S. Water closing argument). But U.S. Water did not offer any actual evidence of copying, or any evidence suggesting such copying occurred.

To the contrary, Novozymes first offered a phytase for use in fuel ethanol production in July 2011 in response to a specific request for a phytase from an existing customer, Lifeline Foods. Dkt. No. 823, Trial Tr. (Oct. 13, 2017 a.m.) at 149:10–20 (Rogers); *see also id.* 144:24–145:3 (Rogers); Dkt. No. 757, Anderson Dep. Tr. at 11:15–22. Novozymes used its own phytase, Ronozyme P-(L), it instructed customers to add phytase only to fermentation, and it developed its own dosing regimen based on its own prior work and laboratory experiments. Dkt. No. 823, Trial Tr. (Oct. 13, 2017 a.m.) at 145:8–17 (Rogers); Dkt. No. 757, Anderson Dep. Tr. at 25:4–26:2, 45:17–22.

At trial, U.S. Water suggested that Novozymes' own documents are evidence of copying, observing that "Novozymes instructed its customers to use their Phytaflow product in exactly the same way those customers had used U.S. Water's pHytOUT product." *See, e.g.,* Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 30:19–32:16 (U.S. Water opening statement citing PTX 69 and PTX 158); *see also* PTX 69, PTX 158. But simply telling a customer to use Phytaflow like pHytOUT, or stating to a prior pHytOUT user that they likely know how to use Phytaflow, in no way demonstrates that Novozymes copied the claimed invention. As an initial matter, such communications amount to no more than shorthand for informing a customer that Phytaflow should be added during fermentation to reduce formation of phytate deposits. But even setting that aside, it is undisputed that Novozymes used its own phytase and developed its own dosing protocol, and thus did not copy the claimed invention.

d. There Was No Long-Felt Need for the Claimed Invention, nor a Failure of Others to Achieve the Claimed Invention

U.S. Water's claimed invention did not satisfy any "long-felt need" for an alternative to conventional methods of controlling phytate deposits, or reflect U.S. Water's success where others had failed.

A problem that is identified by an industry but left unsolved by others can support a finding of non-obviousness, but “the mere passage of time without the claimed invention is not evidence of nonobviousness.” *See, e.g., Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004). Rather, “[t]he failure of the prior art to mention a problem may be due to the fact that in practice the problem is not a serious one or that a large number of satisfactory solutions is readily apparent.” *In re Gershon*, 372 F.2d 535, 538 (C.C.P.A. 1967); *see also DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1371–72 (Fed. Cir. 2006) (rejecting supposed evidence of “failed attempts” because the company at issue did not pursue developing the invention due to “a calculated business judgment” concerning the costs surrounding the associated new product line).

The evidence at trial showed that the claimed invention did not address a long-felt, unsolved need in the fuel ethanol industry; rather, the claimed invention and U.S. Water’s pHytOUT corresponded fortuitously with an *economic* opportunity. The dramatic, more than four-fold increase in the cost of sulfuric acid in 2008 made using phytase a viable option for some plants who were previously content to use sulfuric acid to control all deposits, including phytate deposits. Dkt. No. 823, Trial Tr. (Oct. 13, 2017 p.m.) at 150:14–151:8 (Rogers); *see also id.* at 151:15–152:20 (Rogers) (discussing PTX 45); PTX 45 at NZ-USW00002745. To address this economic opportunity, U.S. Water simply took what was already in the public domain and packaged it as a product offering to the fuel ethanol industry. *See Geo. M. Martin Co. v. All. Mach. Sys. Int’l LLC*, 618 F.3d 1294, 1304–05 (Fed. Cir. 2010) (finding no long-felt but unsolved need where the “differences between the prior art and the claimed invention” are minimal since the “need” is met by prior art); *see also ABT Sys., LLC v. Emerson Elec. Co.*, 797 F.3d 1350, 1362 (Fed. Cir. 2015) (finding that “[t]he disclosures of the prior art references . . .

eliminate any serious contention that there was a long-felt need for the invention claimed” by the patent-in-suit, and reversing a district court’s denial of a motion for judgment as a matter of law of invalidity). The evidence does not support U.S. Water’s contention that its invention addressed some long unsolved problem in the fuel ethanol industry that others attempted to solve but could not.

The testimony of Novozymes’ former employee, Donna MacSwain-Santos, does not change that conclusion. At trial, Ms. MacSwain-Santos testified that fouling “was a big issue in the industry.” Dkt. No. 756, MacSwain-Santos Dep. Tr. at 66:2–10. But she was referring to the fuel ethanol industry in *2010*, three years after U.S. Water’s priority patent application was filed. *See id.* at 42:17–43:1, 44:21–45:2, 60:10–15, 62:22–63:13, 64:13–19. This belated assessment is irrelevant as a secondary consideration of non-obviousness. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1332 (Fed. Cir. 2009) (“Evidence that an invention satisfied a long-felt and unmet need *that existed on the patent’s filing date* is a secondary consideration of nonobviousness.” (emphasis added)). In fact, Ms. MacSwain-Santos’ testimony and documents underscore the economic opportunity that spurred the claimed invention, as they reflect the substantial increase in the price of sulfuric acid. *See* PTX 45 at NZ-USW00002745; PTX 12 at NZ-USW00002605. Instead of addressing a long-felt need that others had failed to address, the claimed invention met a *newly pressing* economic need for fuel ethanol plants to reduce the amount of money spent on sulfuric acid.

The only witnesses who addressed the nature and timing of the fuel ethanol industry’s “need” for alternative methods to control phytate deposits testified that this type of fouling was *not* an unsolved problem that perplexed the fuel ethanol industry at the time of the invention. Dkt. No. 830, Trial Tr. (Oct. 16, 2017 a.m.) at 37:9–38:8 (Kohl) (testifying that the first time he

was asked to assist a plant with a fouling issue was in 2011 at Lifeline Foods); *see id.* at 81:6–16 (Kohl) (testifying that sulfuric acid treats many types of fouling, including phytate fouling); *see also* Dkt. No. 823, Trial Tr. (Oct. 13, 2017 a.m.) at 148:1–149:9 (Rogers) (testifying that there was no business case for offering a phytase to address phytate-based fouling in 2008). This testimony was not contradicted.

D. No Reasonable Jury Could Have Found that the Asserted Claims Are Supported by Adequate Written Description

To satisfy the written description requirement, the specification of U.S. Water’s October 17, 2007 priority application must show that the inventors *then possessed* the specific invention that U.S. Water now claims and asserts against Novozymes. *See Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1355 (Fed. Cir. 2010) (en banc). “[T]he test for sufficiency [of written description] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Id.* at 1351. “To obtain the benefit of the filing date of a parent application, the claims of the later-filed application must be supported by the written description in the parent in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention *as of the filing date sought.*” *Anascape, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1335 (Fed. Cir. 2010) (emphasis added) (quotation omitted).

The evidence presented at trial showed that here, the specification of the priority application falls short of that standard. Support for two limitations—“wherein the pH of the ethanol processing fluid in the beer column is 4.5 or higher during production of [the quantity of] ethanol” (the “pH 4.5 or higher” limitation) and “wherein the reduction in the formation of insoluble deposits of phytic acid and/or salts of phytic acid in fuel ethanol processing plant equipment or a portion thereof during production of the quantity of ethanol is accomplished

substantially without the addition of an acidic compound that can break down organic phosphates and phosphonates into soluble inorganic phosphates in the presence of an oxidizer, oxidizing agent, or ultraviolet light” (the “substantially by phytase” limitation)—cannot be found in the specification. These limitations appear in all asserted claims: claims 1, 6, and 7 of the ’137 patent and claims 2, 16, and 18–20 of the ’399 patent contain the pH 4.5 or higher limitation, and claims 1, 5, and 7–9 of the ’399 patent contain the substantially by phytase limitation. All of the asserted claims are thus invalid for failure to meet the written description requirement of 35 U.S.C. § 112.

Additionally, U.S. Water’s own admissions confirm that these two limitations were not disclosed in the October 17, 2007 application, but instead were withheld from public disclosure by U.S. Water until years later. Indeed, the inventors did not discover the aspects of their purported invention that are reflected in these two claim limitations until March 2008, well after the October 2007 filing date. This evidence is consistent with the lack of disclosure of the claim limitations in the specification.

Given both the intrinsic and extrinsic evidence, no reasonable jury could have concluded that the asserted claims are supported by written description. Novozymes is entitled to judgment as a matter of law that the asserted claims of the ’137 and ’399 patents are invalid on this ground.

1. The “pH 4.5 or Higher” Limitation Lacks Written Description

The “pH 4.5 or higher” limitation was added for the first time to the claims of the ’137 patent in a July 20, 2012 amendment, and was in the continuation application U.S. Water filed on June 5, 2012 that became the ’399 patent. *See* DTX 2019 at 006–007; DTX 2029 at 041–046.

The specification contains no support for the “pH 4.5 or higher” limitation. There is a single paragraph in the specification that mentions a pH of 4.5 in the context of phytate deposits’ tendency to form:

Ethanol producers have found scale deposits on processing equipment at several stages of ethanol processing. These scale deposits are known to impede heat transfer and flow, and interfere with the proper operation of mechanical devices used in ethanol processing. *The deposits tend to be most severe or tenacious on hot surfaces, and where the pH of the processing liquid is highest (about 4.5), but deposits may also form at lower pH values and on cooler surfaces.* There remains a need for methods and compositions for reducing this scale formation.

DTX 2002 at 1:34–43 (emphasis added). Both parties’ experts agreed that this paragraph describes deposits that form at *about* pH 4.5, and deposits that form *below* pH 4.5. As Dr. Kohl explained, this passage “just says that there are deposits at pH 4.5 where it’s hot [and] there are deposits where the pH is lower and also where it’s also cooler”; nothing in this passage suggests that it is desirable for beer column pH to be 4.5 or higher. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 45:4–46:9. Mr. Flanegan acknowledged on cross examination that this paragraph describes “the background” of the invention; it does not mention a beer column, and not only does *not* mention a pH higher than 4.5, but instead mentions a pH lower than 4.5. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 161:22–24, 163:2–18. This Court previously characterized this passage as indicating that “even the targeted ‘tenacious’ deposits occur at *about* 4.5, which would include lower values.” Dkt. No. 561, Summary Judgment Order at 12.

The other portions of the specification on which Mr. Flanegan relied for written description support of the pH 4.5 or higher limitation do not describe this aspect of the claims. Specifically, Mr. Flanegan cited to Tables 1, 2, and 4 in the specification as support. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 91:7–18, 92:18–24. But as Mr. Flanegan admitted, these tables do not describe a pH of 4.5 or higher in the beer column during ethanol production. *Id.* at 163:19–166:2 (admitting that Table 1 does not reference a beer column, or pH 4.5 or higher in the beer column); *id.* at 166:3–24 (same for Table 2); *id.* at 166:25–167:12 (same for Table 4). Instead, each table reflects the results of experiments assessing how precipitation varies with changes in temperature or alcohol content for a given pH, and the effect of using a phytase on

precipitation at different temperatures. For example, as Mr. Flanegan conceded, Table 1 shows the results of an experiment looking at the effect of temperature on the solubility of magnesium phosphate and magnesium phytate for pHs ranging from 4.23 to 5.76. *Id.* at 163:19–165:4 (“Well, they’re showing which temperature – for a given temperature, is there fouling at a given pH for this recipe.”). He similarly agreed that Table 2 shows the results of experiments comparing the solubility of phytate in diluted ethanol compared to water alone for different pHs and different temperatures. *Id.* at 166:3–16. And Mr. Flanegan admitted that Table 4 merely shows the effect of phytase on preventing precipitation across a broad range of temperatures, with pH held constant at 5.3. *Id.* at 166:25–167:6.

Finally, the only remaining portion of the specification that directs a person of ordinary skill in the art to use a particular pH states: “In another aspect, the phytase is added to the ethanol processing fluid at pH of about 3 to about 9, for example, about 4.0 to about 5.0, about 4.0 to about 5.5, or about 4.0 to about 5.3.” DTX 2002 at 6:48–51. Mr. Flanegan did not rely on this disclosure as written description support for the pH 4.5 or higher limitation, nor could he have as it includes no instruction regarding the beer column or the choice of pH 4.5 as a minimum pH for the fluid in the beer column. If anything, this portion of the specification directs the skilled artisan to a lower minimum pH threshold. Nor does this portion of the specification provide support for an unlimited pH range above 4.5, with no maximum pH claimed.

There is simply no disclosure in the specification suggesting that it is advantageous or otherwise desirable to have the pH of the ethanol processing fluid in the beer column be 4.5 or higher.

2. The “Substantially by Phytase” Limitation Lacks Written Description

The specification does not describe reducing formation of phytate deposits substantially by phytase and not by acid with an oxidizer. Dr. Kohl and Mr. Flanegan agreed that the specification discusses three methods for reducing or eliminating deposits: (i) using an acid with oxidizing agent, (ii) using an acid with UV light, or (iii) using an enzyme such as a phytase. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 49:15–51:2 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 170:11–20 (Flanegan); *see also* DTX 2002 at 5:21–37. Both experts agreed that none of these three options is described in a negative way, or in a way that suggests that deposit formation should be reduced substantially by phytase and *not* acid with an oxidizer or UV light. *See* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 51:3–9, 51:19–23 (Kohl); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 170:21–171:11 (Flanegan).

U.S. Water points to no other portions of the specification as supporting the “substantially by phytase” limitation. Thus, this limitation lacks adequate written description support. *See Anascape*, 601 F.3d at 1355 (holding that the claims “must be supported by the written description in the parent in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention *as of the filing date sought*” (emphasis added) (quotation omitted)).

3. U.S. Water’s Admissions Support Judgment as a Matter of Law of No Written Description

The “pH 4.5 or higher” and the “substantially by phytase” limitations both derive from U.S. Water’s “discovery” that fuel ethanol plants may reduce their use of sulfuric acid if they are using phytase to break down phytic acid. U.S. Water refers to this discovery as “reduced acid

feed.” *See* Hayden Decl.,⁹ Ex. 2 (DTX 2158 REDACTED) at 001 (identifying “[t]he reduction in acid feed”); Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 144:2–9 (Johnson) (confirming that pH 4.5 or above is part of the “reduced acid feed” concept). As Dr. Kohl explained, if plants reduce the amount of sulfuric acid added to a processing fluid, the pH of that fluid will increase. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 38:6–25 (“So if I normally would add enough acid to bring [the pH] down to, let’s say, 4 or if I add less acid or reduce the acid feed, the pH will not get down to 4, it will get down to something higher.”). This correlation between reduced acid and increased pH is widely understood, as Mr. Dorn explained. *See* Dkt. No. 815, Trial Tr. (Oct. 11, 2017 p.m.) at 51:25–52:14 (“It’s well known in the industry that if—and by many people that if you increase sulfuric acid, you will decrease the pH.”); *see also id.* at 31:2–5 (Dorn) (explaining that “as you add more sulfuric acid . . . the pH goes down” and conversely that “[a]s you add less sulfuric acid, the pH is higher”); *id.* at 52:15–20 (Dorn) (testifying that low pressure distillation plants typically run with pH around 4 or 4.2, and that if they reduce sulfuric acid, the pH will rise). Both the “pH 4.5 or higher” and “substantially by phytase” limitations reflect “reducing the acid feed to the ethanol plant.” Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 37:19–38:5 (Kohl); *see also id.* at 144:2–9 (Johnson) (admitting that the pH 4.5 or higher limitation “recites the reducing acid feed concept”); Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 168:10–24 (Flanagan) (admitting that “not add[ing] acid” would result in a pH in the beer column close to the fermentation pH, which is typically 4.5 to 5).

U.S. Water elected to keep the “reduced acid feed” concept *as a trade secret* until years after the priority patent application was filed. In June 2011, U.S. Water charged another

⁹ Declaration of Amy E. Hayden in Support of Novozymes’ Renewed Motion Under Rule 50(b) for Judgment as a Matter of Law of Invalidity and, in the Alternative, Motion for a New Trial on Invalidity Under Rule 59 (“Hayden Decl.”).

company with misappropriation of trade secrets relating to pHytOUT. *See* Hayden Decl., Ex. 1 (DTX 2157 REDACTED). U.S. Water alleged: “The pHytOUT® Trade Secrets *have not been published or disclosed in the prosecution file for the pHytOUT® Application*, do not appear in industry literature, and have not been demonstrated or taught by U.S. Water except to its customers who have entered into confidential non-disclosure agreements.” *Id.* ¶ 24 (emphasis added). Among these trade secrets, U.S. Water specifically identified “[t]he reduction in acid feed resulting from use of the pHytOUT® system.” Hayden Decl., Ex. 2 (DTX 2158 REDACTED) at 001. Mr. Johnson confirmed in a declaration that this same concept was “not taught nor mentioned in the patent filing.” Hayden Decl., Ex. 3 (DTX 2163 REDACTED) ¶ 13. In fact, at trial Mr. Johnson reaffirmed that this concept *was* a trade secret, and *was not* disclosed in U.S. Water’s October 2007 priority patent application. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 137:20–138:8, 139:10–15, 140:14–19.

U.S. Water’s admissions that “reduced acid feed” was a trade secret and not disclosed in its priority patent application support the conclusion that the claim limitations at issue are not adequately described. In *Atlantic Research Marketing Systems, Inc. v. Troy*, the Federal Circuit explained that the patentee cannot “‘have it both ways’ by reaching back and relying on the disclosures in the [asserted] patent to claim an invention he was purposely shielding from the public [as a trade secret].” 659 F.3d 1345, 1356 (Fed. Cir. 2011); *see also Amgen Inc. v. Sanofi*, 872 F.3d 1367, 1373–75 (Fed. Cir. 2017) (reversing district court exclusion of extrinsic evidence as irrelevant to written description where the challenged evidence was offered to show the scope of the inventors’ disclosure). But that is exactly what U.S. Water sought to do. No reasonable jury could have disregarded U.S. Water’s admissions and instead concluded that the concept was *simultaneously* a trade secret *and* a public disclosure.

The lack of written description support for the two limitations is further confirmed by U.S. Water’s admissions that this aspect of the claimed invention was not discovered by U.S. Water until March 2008 at the earliest, five months after the priority date. On February 20, 2008, Dr. Young emailed the EPT group at U.S. Water attaching a document about “Phytase Value.” DTX 2364. As of February 20, 2008, the Phytase Value document made no mention of pH or sulfuric acid. *Id.* at 002. A few weeks later, in a March 8–9, 2008 email exchange with Mr. Johnson, Dr. Young said: “*I had assumed* that the advantage of phytase would be reducing scale *while maintaining the same pH*. However, the solubility of mag phosphate is so much greater than that of mag phytate, that we will still prevent scale at somewhat higher pH.” DTX 2495 at 001 (emphases added). Then, on March 27, 2008, Dr. Young sent another email in which he stated that he had “expanded and updated [his] memo on determining the value of phytase to the customer” and asked whether the team had “[a]ny ideas on how we can put numbers to some of these benefits?” DTX 2363 at 001. The attachment to the email identified, *for the first time*, reduced sulfuric acid use and possible higher pH in the beer column as a benefit of using phytase. *Id.* at 002–003. That the inventors did not discover these “advantages” until after the 2007 specification was filed is not surprising, as U.S. Water at that time had no data regarding use of phytase in a fuel ethanol plant. *See* Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 95:6–97:19 (Johnson) (discussing U.S. Water’s first attempt at using phytase in a fuel ethanol plant in 2008).

These admissions reflected in Dr. Young’s communications between February 20, 2008 and March 27, 2008 show that the inventors did not possess the “pH 4.5 or higher” limitation or the “substantially by phytase” limitation at the time the priority patent application was filed. *See* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 52:19–25 (Kohl). Further support for that

conclusion is found in Mr. Johnson's testimony at trial. Specifically, he testified regarding an interview with the patent examiner on June 21, 2012, and admitted that he told the examiner that the new advantages of his invention include the reduction or elimination of sulfuric acid, and the ability to operate the beer column at a higher pH. *Id.* at 142:9–19. He also testified that U.S. Water *at that time* submitted new claims to describe these “advantages.” *Id.* at 142:20–22.

In sum, U.S. Water did not comply with the written description requirement; the October 17, 2007 parent application contains no discussion of the “pH 4.5 or higher” limitation because the inventors did not even possess that invention until March 2008. No evidence supports a finding otherwise.

III. IN THE ALTERNATIVE, NOVOZYMES IS ENTITLED TO A NEW TRIAL ON INVALIDITY

A. Legal Standard for a New Trial

A motion for a new trial under Rule 59 is directed to the discretion of the Court, which may grant a new trial on any issue if “the verdict is against the weight of the evidence” or “if for other reasons the trial was not fair to the moving party.”¹⁰ *Shick v. Ill. Dep’t of Human Servs.*, 307 F.3d 605, 611 (7th Cir. 2002) (quotation omitted).

To obtain a new trial based on an evidentiary error, that error must have had “a substantial influence over the jury” such that “the result reached was inconsistent with substantial justice.” *Id.* at 613–14 (concluding that district court abused its discretion in refusing to grant new trial on plaintiff’s sex discrimination claim following post-trial dismissal of plaintiff’s disability discrimination claim, as it was “hard to imagine” how a jury could have

¹⁰ A Rule 59 motion raises “procedural issue(s) not unique to patent law,” and is therefore reviewed under the law of the regional circuit rather than under the law of the Federal Circuit. *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1361 (Fed. Cir. 1999); *accord Leader Techs., Inc. v. Facebook, Inc.*, 678 F.3d 1300, 1305 (Fed. Cir. 2012) (reviewing denial of motion for a new trial under regional circuit law).

reached its verdict in favor of plaintiff on the former claim “without the extensive [irrelevant and prejudicial] testimony about the abusive treatment regarding [plaintiff’s] many ailments”); *see also Cerabio LLC v. Wright Med. Tech., Inc.*, 410 F.3d 981, 994 (7th Cir. 2005) (finding district court’s blanket exclusion of evidence improper and ordering a new trial as the exclusion had prevented defendant from presenting “a fundamental piece” of evidence that went to the “heart of the defense”). An evidentiary error satisfies that standard “if a significant chance exists” that the error “affected the outcome of the trial.” *Shick*, 307 F.3d at 611.

With respect to erroneous jury instructions, a new trial is proper where “the instructions [at trial] did not adequately state the law and that the error was prejudicial to [the defendants] because the jury was likely to be confused or misled.” *Boyd v. Illinois State Police*, 384 F.3d 888, 894 (7th Cir. 2004).

B. Novozymes Was Prejudiced Because U.S. Water Argued an Incorrect Legal Standard for Inherent Disclosure, and the Court Did Not Provide a Correction

The jury was instructed on the law of anticipation as follows:

To prove that a patent claim is anticipated, Novozymes must prove by clear and convincing evidence that each and every element in the claim is present in a single item of prior art, and arranged or combined in the same way as recited in the claim. You may not combine two or more items of prior art to find anticipation. In determining whether every one of the elements of the claimed invention is found in the prior art, you should take into account what a person of ordinary skill in the field of the invention would have understood from his or her review of the particular item of prior art.

. . .

In determining whether Veit anticipates an asserted claim, you must consider not only what is expressly disclosed in Veit, but also what is inherently present or disclosed in Veit or inherently results from its practice.

Prior art inherently anticipates a patent claim if the missing element or feature would necessarily result from what the prior art teaches to persons of ordinary skill in the field of the invention. A party claiming inherent anticipation must prove by clear and convincing evidence that the allegedly inherent element necessarily is present. Evidence other than the item of prior art may be used to

show that elements that are not expressly disclosed in the reference are inherent in it. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. Rather, the inherent result must inevitably result from the disclosed steps. It is not required, however, that persons of ordinary skill actually recognized or appreciated the inherent disclosure at the time the prior art was first known or used.

Dkt. No. 803, Post-Trial Jury Instructions at 13–14. That instruction is not incorrect as a general statement of the law of anticipation. At trial, however, U.S. Water repeatedly argued to the jury that the prior art does not anticipate the asserted claims unless *every embodiment* described in the prior art meets every limitation of the asserted claims. This is not a correct statement of the law, and the jury should have been so instructed by means of a corrective instruction or as a further final jury instruction.

At trial, U.S. Water’s counsel and its expert contended that Veit did not anticipate the asserted claims because phytate deposits *might not* be reduced at *every* phytase dosage in the embodiments described in Veit. For example, Mr. Flanegan stated that in forming his opinions, he assumed that every point in Veit’s phytase dosage ranges would have to reduce deposits for Veit to inherently disclose the reducing deposits limitation:

Q. . . Let me just ask you, in forming your opinions, did you assume that every single embodiment or every single point in any dosage range disclosed in Veit would have to reduce deposits?

A. So the advice that I was given by counsel on whether it necessarily would have to happen was that, yes, any of these ranges and any of these enzymes would necessarily have to result in what was then disclosed in the U.S. Water patent.

Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 149:18–150:1. Because he assumed that *every* point in Veit’s dosage ranges would have to reduce deposits for Veit to inherently disclose the reducing deposits limitation, and thus for there to be inherent anticipation, Mr. Flanegan continually focused on the lowest phytase dose disclosed in Veit:

Q. Let's talk about that lower part of the range. Have you seen any evidence that using a dose of .005 -- and I'll use their measurement -- FYT per gram dissolved solid would reduce deposits?

A. I have not.

Id. at 105:16–20; *see also id.* at 107:11–108:1 (Flanegan) (observing that Veit's sole example uses a phytase dosage greater than 0.005 FYT/g DS); *id.* at 102:3–103:4, 108:7–109:1 (Flanegan). And to drive the same point home a final time, U.S. Water's counsel argued to the jury in closing that “[i]f using [the lower part of the range] doesn't reduce deposits, [Veit] does not inherently anticipate.” Dkt. No. 826, Trial Tr. (Oct. 18, 2017 a.m.) at 114:1–9; *see also id.* at 116:20–117:4 (U.S. Water closing).

But as explained above, this is not the law. There is no requirement that *every* embodiment in a prior art reference anticipate the asserted claims; anticipation is established so long as a single prior art reference contains at least one embodiment disclosing all elements of the asserted claims, expressly or inherently. *See supra* § II.B.1.b. Mr. Flanegan's testimony and the arguments of U.S. Water's counsel thus misstated the law of anticipation to the jury, leading the jury to believe incorrectly that Novozymes needed to prove by clear and convincing evidence that *every* phytase dosage disclosed in Veit would necessarily reduce the formation of phytate deposits.

During trial, Novozymes asked the Court to order U.S. Water to not present argument and evidence under this improper legal standard, and particularly objected to U.S. Water's counsel “lectur[ing] a nonlawyer” (i.e., Dr. Kohl) about an incorrect legal standard. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 93:23–97:12. Novozymes also asked the Court to issue a corrective instruction at the charge conference. *See id.* at 256:7–262:9. The Court declined to do so. *See* Dkt. No. 803, Post-Trial Jury Instructions at 12–14; *see also* Dkt. No. 833, Trial Tr.

(Oct. 17, 2017 a.m.) at 15:15–19:5 (argument concerning this standard in relation to one of U.S. Water’s Rule 50(a) motions).

In the absence of an instruction explaining this point of law to the jury, Novozymes was prejudiced by U.S. Water’s counsel’s and its expert’s misapplication of the law. Instead of having to prove that at least one of Veit’s embodiments inherently discloses the reducing deposits limitation for the asserted claims to be anticipated, which is all the law requires, the jury was led to believe that Novozymes had to prove that *all* of Veit’s embodiments—i.e., each and every phytase dosage in Veit’s ranges—would have necessarily reduced deposit formation. For the same reason, this misapplication of the law likely also affected the jury’s obviousness verdict. For these reasons, Novozymes is entitled to a new trial on the issues on anticipation and obviousness.

C. Novozymes Was Prejudiced Because the Court Failed to Instruct the Jury that the Asserted Claims Do Not Require a Measurable Reduction in Phytate Deposit Formation, Contrary to the Court’s Claim Construction

Each of U.S. Water’s asserted claims requires reducing the formation of deposits of phytic acid and its salts. No particular amount of reduction is required, nor is a particular technique for determining reduction claimed. *See, e.g.*, DTX 2001 at claim 1 (“thereby reducing the formation of deposits of insoluble phytic acid or phytic acid salts on surfaces in the equipment”). In construing this claim limitation, the Court observed that “the amount of reduction is not quantified” in the asserted claims. *See* Dkt. No. 681, Claim Construction Opinion & Order at 8–9. Rather, “the ‘reducing’ element is satisfied if the amount of phytic acid and phytic acid salt is reduced more than it would have been without the use of phytase.” *Id.* at 27.

Despite the language of the claims and the Court’s claim construction, U.S. Water took the position at trial that an “unobservable” or “unmeasurable” reduction in deposit formation would not satisfy the claims. U.S. Water’s expert, Mr. Dorn, testified that some unspecified

amount of phytate would need to be broken down so that one could “see the difference” in the amount of deposit formation. Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 65:23–67:15. Moreover, counsel for U.S. Water argued in closing that Novozymes must prove that Veit inherently discloses a “measurable change” in deposit reduction in order to inherently anticipate the asserted claims. Dkt. No. 826, Trial Tr. (Oct. 18, 2017 a.m.) at 116:2–19; *see also id.* at 45:18–46:1 (U.S. Water’s counsel at least implying that the asserted claims require “get[ting] a response,” i.e., measurable deposit reduction). While a commercial fuel ethanol plant may not be able to easily observe whether and by how much deposits are reduced when phytase is added, an “observable” or “measurable” reduction of phytate deposits is not required by the claims.¹¹ As construed by the Court, the claims require only that phytate deposit formation be “reduced more than it would have been without the use of phytase,” Dkt. No. 681, Claim Construction Order at 27, and not that phytate deposit formation be reduced beyond the threshold necessary to impact commercial indicators of fouling, such as by improving heat transfer, decreasing differential pressure, or reducing cleaning frequency in a fuel ethanol plant. *See supra* at 6–7.

Novozymes was not permitted to cross-examine Mr. Dorn on whether, for purposes of his opinion, he understood that the asserted claims do not require any specific amount of reduction:

Q. This requires reducing the formation of deposits; it doesn’t say that it needs to be 5% or 10% or 20%, correct?

MS. UMBERGER: Objection. Foundation. Asked and answered. Also calls for legal conclusion, as this claim has already been construed by this Court.

THE COURT: I’ll sustain that.

...

Q. And the claims don’t require any particular visual level of reduction, one that you can see with your own eyes or through observation in a plant, correct?

¹¹ The specification describes an embodiment in which phytate deposits are reduced to a level “acceptable for operation of the ethanol plant.” *See, e.g.*, DTX 2001 at 6:29–48. That embodiment was not claimed.

MS. UMBERGER: Objection.

THE COURT: I'll sustain that.

Dkt. No. 833, Trial Tr. (Oct. 17, 2017 a.m.) at 72:7–74:2. In addition, although Novozymes asked the Court to provide a clarifying instruction that no specific quantum of reduction is required by the claims, the Court declined to do so. *Id.* at 76:21–81:6; Dkt. No. 825, Trial Tr. (Oct. 17, 2017 p.m.) at 45:6–46:15; *see also* Dkt. No. 803, Post-Trial Jury Instructions at 6.

The Court's refusal to give a corrective instruction in these circumstances was unfair and prejudicial to Novozymes. U.S. Water's presentation of evidence at the very least implied that the asserted claims require a reduction of deposits that could be seen or measured by commercially available equipment in the plants. Because it is likely that this testimony influenced the jury's verdicts on both anticipation and obviousness, Novozymes is entitled to a new trial on these issues.

D. Novozymes Was Prejudiced Because the Court Excluded Highly Probative Inventor Testimony

The Court excluded portions of the deposition testimony of Dr. Young regarding how he arrived at his purported “discovery.” This was prejudicial error, as the testimony is highly relevant to Novozymes’ invalidity defenses of anticipation and obviousness. Novozymes now moves for a new trial because exclusion of this evidence prejudiced its ability to present these defenses. *See Cerabio*, 410 F.3d at 994.

1. The Excluded Evidence Included Admissions Regarding the Scope and Expected Nature of Dr. Young’s “Discovery”

The Court excluded two categories of testimony by Dr. Young: (1) admissions regarding the scope of his invention as compared to the prior art, and (2) admissions regarding how the claimed invention reflected merely expected results.

First, the Court excluded Dr. Young's testimony about the prior art of which he was aware and that informed his thinking as of October 2007. *See, e.g.*, Dkt. No. 771-1, Young Dep. Tr. at 79:5–12, 81:18–82:15, 110:12–111:1, 114:22–115:1, 115:18–116:2, 116:13–117:19, 120:10–14, 123:9–125:13, 126:13–18, 132:11–133:10, 137:13–138:3, 139:16–21, 140:2–19, 141:12–15, 141:19–21, 162:25–163:14, 164:21–165:1, 165:9–14, 165:17–166:15, 302:2–11, 304:3–305:24, 306:2–6.

This testimony included the following admissions:

a. Dr. Young admitted that [REDACTED]

[REDACTED]
[REDACTED] . DTX 2387

(Dep. Ex. 1033)); Dkt. No. 771-1, Young Dep. Tr. at 77:2–6, 79:5–12 (referring to Dep. Ex. 1033).

b. Dr. Young admitted that [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Dkt. No. 129, Young Dep. Tr. at 82:3–83:5 (emphases added); *see also* Dkt. No. 771-1, Young Tr. at 305:21–306:6 (“[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED].”).

c. Dr. Young admitted that [REDACTED]
[REDACTED]. Dkt. No. 771-1, Young Dep. Tr. at 110:12–16. He admitted that
[REDACTED] (*id.* at 110:12–111:1); that [REDACTED]
[REDACTED] (*id.* at 115:18–116:2, 116:13–18, 120:10–14); and that [REDACTED]
[REDACTED]
[REDACTED] (*id.* at 116:19–117:19).

d. Dr. Young admitted that [REDACTED]
[REDACTED]
[REDACTED]. *Id.* at 124:2–125:13, 126:19–23; *see also id.* at 263:13–19, 263:25–264:2, 265:17–266:6, 266:11–18 (testifying regarding examiner interview). However, he also admitted that [REDACTED]
[REDACTED]. *Id.* at 126:13–18.

e. Dr. Young admitted that [REDACTED]
[REDACTED]
[REDACTED]. *Id.* at 132:14–133:10, 137:19–138:3.

f. And finally, Dr. Young admitted that [REDACTED]
[REDACTED]
[REDACTED]

Id. at 140:13–19 (emphasis added); *see also id.* at 162:25–163:14 (admitting that

Second, the Court excluded testimony of Dr. Young regarding the expected results that formed the basis of the claimed invention. *Id.* at 79:5–12, 140:2–19, 141:12–15, 141:19–21, 164:21–25, 165:17–166:15, 306:2–6. This testimony included the following admissions:

a. Dr. Young admitted that b

Id. at 164:21–25, 165:9. Rather, he admitted that

165·17-21

b. Dr. Young admitted that

Id. at 165:22–166:15 (emphases added).

c. Finally, Dr. Young admitted that [REDACTED]
[REDACTED]
[REDACTED]

Id. at 306:2–6.

2. The Exclusion of Dr. Young’s Testimony Prejudiced Novozymes’ Prior Art Invalidity Defenses

The exclusion of this testimony from Dr. Young prejudiced Novozymes. The testimony included affirmative evidence supporting Novozymes’ invalidity defenses of anticipation and obviousness. The excluded evidence also was inconsistent with evidence and argument presented by U.S. Water, and was consistent with the testimony of Novozymes’ witnesses.

First, Dr. Young’s testimony specifically rebuts U.S. Water’s assertions that the asserted patents cover a patentable “new use of a known process or product.” Far from being a patentable “new use” of phytase, Dr. Young admitted that [REDACTED]

[REDACTED]. *Id.* at 306:2–6. His testimony clarifies that [REDACTED]
[REDACTED]. *Id.*

Second, Dr. Young’s testimony contradicts U.S. Water’s contention that the use of phytase disclosed in Veit and Caransa does not anticipate or render obvious the asserted claims. Dr. Young admitted that [REDACTED]
[REDACTED]
[REDACTED] *Id.* at

165:11–14, 165:17–166:5. Dr. Young also confirmed that [REDACTED]
[REDACTED]. *Id.* at

82:3–15. Dr. Young’s testimony establishes that the alleged invention reflects *exactly what he expected to occur.*

Third, with respect to obviousness, U.S. Water was permitted to offer the testimony of Mr. Johnson that the problem of deposits in fuel ethanol production was “baffling,” and that U.S. Water’s alleged inventions were met with skepticism. Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 82:15–21, 85:24–86:14, 95:22–96:5. U.S. Water made the same arguments in its opening statement. *Id.* at 23:25–24:1, 39:12–19. Dr. Young’s admissions squarely rebut these assertions. What U.S. Water heralds as its inventive contribution over the prior art—the purpose of reducing deposits—was not “baffling” to him. It was a [REDACTED]

[REDACTED]. Dkt. No. 771-1, Young Dep. Tr. at 165:11–14, 165:17–166:11. Had Dr. Young’s testimony been admitted, the jury would have realized that the claimed inventions did not reflect unexpected results, but rather the application of well-known enzyme chemistry. *See* Dkt. No. 814, Trial Tr. (Oct. 10, 2017 p.m.) at 96:2–4 (Johnson).

Finally, Dr. Young’s testimony rebuts U.S. Water’s argument at trial that Caransa is not sufficiently related to the invention, that it does not disclose the problem of deposit formation, and that there would be no motivation to combine Caransa with the disclosure of Veit. *Compare id.* at 21:15–21 (U.S. Water’s counsel telling the jury that it “will not see evidence” that “anybody ever thought of using phytase to solve this problem”), *with* Dkt. No. 771-1, Young Depo. Tr. at 116:19–117:19 (admitting that [REDACTED]
[REDACTED]), and 126:13–18 (admitting that [REDACTED]
[REDACTED]), and 132:14–133:10 (admitting that [REDACTED]
[REDACTED]). Indeed, the very fact that Dr. Young—an admitted novice in the field of phytases—[REDACTED] undermines U.S.

Water's argument that these two pieces of prior art should not be combined together. Had Dr. Young's testimony been admitted, the jury likely would have reached a different conclusion on the question of whether the asserted claims are obvious.

In sum, Dr. Young's testimony should have been admitted as relevant to Novozymes' invalidity defenses and to rebut inconsistent testimony of his co-inventor, Mr. Johnson, as well as inconsistent arguments of counsel. The Court's exclusion of this evidence prejudiced Novozymes because it undermined Novozymes' ability to prove anticipation and obviousness by clear and convincing evidence. *See Voice Techs. Grp., Inc. v. VMC Sys., Inc.*, 164 F.3d 605, 615 (Fed. Cir. 1999) (recognizing that “[a]n inventor is a competent witness to explain the invention and what was intended to be conveyed by the specification and covered by the claims”).

Accordingly, Novozymes should be afforded a new trial on anticipation and obviousness. In that new trial, the excluded testimony from Dr. Young should be admitted.

E. Novozymes Was Prejudiced by the Constraints Placed on Evidence Regarding U.S. Water's Trade Secrets

As this Court explained before trial, “the fact that U.S. Water maintained [the reduced acid feed concept] as a trade secret is evidence of whether the specification adequately disclosed that information to a person of ordinary skill in the art.” Dkt. No. 728, Final Pretrial Conference Order at 7 (allowing introduction of “the reducing acid trade secret” evidence for the purpose of showing whether U.S. Water’s disclosure was adequate). However, the limits the Court thereafter imposed on Novozymes materially prejudiced Novozymes’ ability to present its written description case.

During the liability phase of trial, the Court allowed only highly redacted versions of documents related to U.S. Water’s trade secrets to be shared with the jury. Dkt. No. 825, Trial Tr. (Oct. 17, 2017 p.m.) at 8:22–9:25 (ordering redactions on these documents of “anything . . .

that relates to the [*ChemTreat*] case”). The trade secret-related documents admitted during this phase were completely stripped of context. *See* Hayden Decl., Ex. 1 (DTX 2157 REDACTED); *id.*, Ex. 2 (DTX 2158 REDACTED); *id.*, Ex. 3 (DTX 2163 REDACTED). Novozymes also was not permitted to elicit testimony adequately explaining how U.S. Water initially withheld these trade secrets from the public and later sought patent claims covering the same matter. *See* Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 165:21–167:19.

In June 2011, U.S. Water filed a complaint against third-party ChemTreat alleging trade secret misappropriation. DTX 2157. In its complaint, U.S. Water identified and attached the patent application filed in October 2007 that became the ’244 patent, and to which the asserted patents claim priority. *See id.* ¶ 14; *see also id.* at 021–030 (patent application). It further termed this patent application “the pHytOUT® Application,” defined “the pHytOUT® Trade Secrets,” and asserted that “[t]he pHytOUT® Trade Secrets have not been published or disclosed in the prosecution file for the pHytOUT® Application.” *Id.* ¶¶ 14, 22, 24. The jury was not permitted to see this evidence. The caption of U.S. Water’s complaint against ChemTreat was redacted in its entirety, as was any reference to U.S. Water as the party complaining of trade secret misappropriation. Hayden Decl., Ex. 1 (DTX 2157 REDACTED) at 001. Of paragraphs 14, 22, and 24, discussed above, the jury was only allowed to see paragraph 24; the rest of the document was almost entirely redacted. *See generally id.* As a result, the jury was presented with a statement regarding two defined terms (paragraph 24), but was not allowed to see the definitions of those terms (paragraphs 14 and 22), or proof that the term “pHytOUT® Application” referred to the patent family at issue in this case. Indeed, of the 64-paragraph document and its attachments, the jury was allowed to see only two full paragraphs, two partial paragraphs, and a partial signature block.

As part of its litigation against ChemTreat, U.S. Water identified its trade secrets in a “Trade Secret Disclosure.” *See* DTX 2158 (unadmitted). This document identified “customer-specific” trade secrets, as well as a list of [REDACTED] [REDACTED]. *Id.* at 001. But the version of the document the jury was allowed to see was completely redacted except for an isolated bit of text that read “4. The reduction in acid feed resulting from use of the pHytOUT® system” and a heading indicating that this was part of the trade secret disclosure of U.S. Water. Hayden Decl., Ex. 2 (DTX 2158 REDACTED).

In addition to U.S. Water’s corporate admissions in the *ChemTreat* proceeding, Mr. Johnson submitted a declaration in the *ChemTreat* court regarding the disclosure in the patents’ specification and U.S. Water’s trade secrets. *See* DTX 2163 (unadmitted). His declaration included admissions regarding what information was not disclosed in the specification. *Id.* ¶¶ 2, 13. The version of the declaration provided to the jury redacted all headings and twelve of the fifteen paragraphs, leaving the jury with no ability to evaluate the context or significance of this document. Hayden Decl., Ex. 3 (DTX 2163 REDACTED).

These three documents—the *only* documents the Court allowed Novozymes to present regarding U.S. Water’s trade secrets—were so heavily redacted that the remaining content was little more than isolated fragments floating in a sea of white space. The Court’s evidentiary ruling prevented Novozymes from presenting any context of U.S. Water’s admissions regarding the reduced acid feed trade secrets. For example, the Court permitted Novozymes to ask Mr. Johnson—the only fact witness from whom Novozymes was allowed to elicit testimony regarding these documents—only “bland” questions, and required Novozymes to avoid referring to the fact that these documents were filed in court. *See* Dkt. No. 828, Trial Tr. (Oct. 11, 2017 a.m.) at 29:1–24, 30:17–23 (ordering that the case not be described, and that it be “as bland as

possible"); Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 132:12–19 (instructing that trade secret evidence elicited from Mr. Johnson be circumscribed); *id.* at 135:11–17 (instructing counsel to "de-emphasize" the caption on DTX 2157 displayed to (but not provided to) the jury); *id.* at 135:20–138:8 (Johnson) (testimony regarding DTX 2157, with no explanation of what the document is); *id.* at 138:9–140:12 (Johnson) (testimony regarding DTX 2163); *id.* at 140:14–19 (Johnson) (testimony regarding DTX 2158, again with no explanation of what the document is).

In addition, the Court excluded in its entirety any testimony from Allan Bly, U.S. Water's former CEO, about the relationship between U.S. Water's trade secrets and its efforts to later patent those secrets. Dkt. No. 824, Trial Tr. (Oct. 16, 2017 p.m.) at 165:21–167:19. The Court sustained U.S. Water's objection to the following question directed to Mr. Bly, on the basis that it was "a description of the other litigation":

Now, Mr. Bly, while you were with U.S. Water, you're familiar with the company's trade secret action against a competitor; correct?

Id. at 165:21–166:13. The Court explained at that point that it would allow Novozymes to introduce "specific statements within [the *ChemTreat*] litigation," but prevented any reference to the litigation itself. *Id.* at 166:7–13. After making this ruling, the Court further ruled that asking U.S. Water's former CEO about trade secrets held by the company during his tenure went "too far," and prevented Novozymes from presenting any testimony at all from Mr. Bly about U.S. Water's trade secrets. *Id.* at 167:3–19.

[REDACTED]
Dkt. No. 168, Deposition of Allan J. Bly dated December 18, 2014 ("Bly Dep. Tr.") at 69:14–16. At his 30(b)(6) deposition, he testified on behalf of his company that [REDACTED]

[REDACTED]. Dkt. No. 317, 30(b)(6) Deposition of Allan J. Bly dated April 8, 2015

(“Bly 30(b)(6) Dep. Tr.”) at 208:18–217:18. He further testified that [REDACTED]
[REDACTED]

[REDACTED] *Id.* at 217:13–20. Mr. Bly was clear that [REDACTED]
[REDACTED]
[REDACTED]

Dkt. No. 317, Bly 30(b)(6) Dep. Tr. at 218:4–19. He also testified that [REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]. Dkt. No. 168, Bly Dep. Tr. at 85:4–86:8; *see also* DTX 2440 (unadmitted) at 002 (email authored by Mr. Bly to Mr. Johnson, stating that [REDACTED]
[REDACTED]).

The extreme alteration of the trade secret documentary evidence before it went to the jury, combined with the limitations the Court imposed on Novozymes’ questioning of Mr. Johnson and the exclusion of all evidence regarding trade secrets from Mr. Bly, prejudicially limited Novozymes’ ability to present evidence in support of its written description case. U.S. Water’s admissions that it held the “reduced acid feed” concept as a trade secret after its priority patent application was published are relevant to a finding that there is no written description of that concept in the application. *Atl. Research*, 659 F.3d at 1356; *see also supra* § II.D.3. A new trial should be granted on this basis.

IV. CONCLUSION

For the foregoing reasons, Novozymes respectfully requests that this Court grant its motion for judgment of invalidity as a matter of law. The only conclusions that a reasonable jury could have reached are that the asserted claims are invalid because they all (1) are anticipated by

Veit, (2) are obvious over Veit in view of Caransa, and (3) lack adequate written description. In the alternative, Novozymes requests a new trial on these invalidity issues.

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Respectfully submitted,

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